

CLAIMS:

1. Brake application system for vehicles, particularly for rail vehicles, containing a wear adjuster which is constructed as a tie rod or plunger rod adjuster and has a helical gear which has a threaded spindle and a nut which can be screwed thereto as the screw connection parts, characterized in that the one screw connection part (4) of the helical gear (2) is electrically driven for the wear adjusting and the other screw connection part (8) of the helical gear (2) is electrically driven for the emergency and/or auxiliary release of the brake.

2. Brake application system according to Claim 1, characterized in that, for the electric actuating of the one screw connection part (4), an electric drive unit (10) is provided which consists of an electric motor (12) with a gearing (14) arranged on the output side, the gearing output of the gearing (14) being rotationally coupled with the electrically actuated screw connection part (4).

3. Brake application system according to Claim 2, characterized in that the electric motor comprises a d.c. motor (12), and the gearing comprises a planetary gearing (16) axially adjoining the d.c. motor as well as one or more gearwheel stages (18) arranged on its output side.

4. Brake application system according to Claim 3, characterized in that a clutch (52) is provided which is arranged in front of the electric drive unit (10) of the one screw connection part (4), by means of which clutch (52), in the event of the presence of an axial force originating from a braking, the one screw connection part (4) is non-rotatably coupled with a non-rotatable part (24) and is otherwise uncoupled from the latter.

5. Brake application system according to Claim 4, characterized in that the clutch is formed by a cone clutch (52) having at least two conical surfaces (56, 58) which can be stopped as a function of friction against one another and are arranged obliquely viewed in the effective direction of the axial force.

6. Brake application system according to Claim 5, characterized in that one of the conical surfaces (56) is constructed on a housing (24) and the other conical surface (58) is

constructed on a conical sleeve (36) non-rotatably connected with the one screw connection part (4).

7. Brake application system according to Claim 6, characterized in that a threaded pin (50) of the one screw connection part (4) is screwed into an internal thread constructed in a bottom of the conical sleeve (36).

8. Brake application system according to Claim 7, characterized in that a gearwheel (30) meshing with a gearing-output-side gearwheel (28) of the gearing (14) is coaxially rotatably disposed on a cylindrical projection (34) of the conical sleeve (36).

9. Brake application system according to Claim 8, characterized in that a sliding clutch (38) is arranged between the electric drive unit (10) and the one screw connection part (4), which sliding clutch (38) is constructed to be slipping when stop positions have been reached and is otherwise coupling.

10. Brake application system according to Claim 9, characterized in that one stop position is formed by the application of the brake pads on the brake disc and another stop position is formed by a screwing end position, in which the one screw connection part (4) is screwed into the other screw connection part (8) to the stop, or vice-versa.

11. Brake application system according to Claim 10, characterized in that the sliding clutch (38) is arranged between the cone clutch (52) and the electric drive unit (10) of the one screw connection part (4).

12. Brake application system according to Claim 11, characterized in that the sliding clutch (38) contains balls (40) pretensioned by defined spring pressure in grooves, the grooves being constructed on a face of the gearing-output-side gearwheel (28), and the balls (40) being held in bores (42) of a ring (44) non-rotatably held on the cylindrical projection (46) of the conical sleeve (36).

13. Brake application system according to Claim 12, characterized in that, at least during the electric actuating of the one screw connection part (4) in one rotating direction for the wear adjustment, the other screw connection part (8) is held in a non-rotatable manner.

14. Brake application system according to Claim 13, characterized in that the other screw connection part (8) is coupled with an electric drive unit (112) for the emergency and/or auxiliary release by means of an unlockable free wheel (74) which, on the one hand, permits a rotation of the other screw connection part (8) by means of the electric drive unit (112) in a direction against the wear adjustment and, on the other hand, is constructed for blocking this rotation if it is not caused by the electric drive unit (112).

15. Brake application system according to Claim 14, characterized in that the electric drive unit (10) of the one screw connection part (4) is actuated independently of the electric drive unit (112) of the other screw connection part (8).

16. Brake application system according to Claim 15, characterized in that the electric drive unit (112) of the other screw connection part (8) contains an electric motor (114).

17. Brake application system according to Claim 16, characterized in that the other screw connection part (8) is coupled by way of a sliding clutch (70) with the electric drive unit (112) and has an application surface (68) for the application of a rotating tool.

18. Brake application system according to Claim 17, characterized in that the one screw connection part is formed by the threaded spindle (4) and the other screw connection part is formed by the nut (8).

19. Brake application system according to Claim 18, characterized in that the unlockable free wheel is formed as a wrap spring free wheel (74) between a cylindrical wall (100) of a non-rotatable part (26) and a sleeve (72) rotating along with the nut (8).